

What is claimed is:

1. A plasma display panel, comprising:

a scan electrode and a sustain electrode, which are formed

5 on an upper substrate in parallel to each other; and

an address electrode formed on a lower substrate in the direction where the address electrode intersects the scan electrode and the sustain electrode,

wherein a distance between the scan electrode and the

10 sustain electrode is set wider than that between the scan electrode and the address electrode.

2. The plasma display panel as claimed in claim 1, further

comprising an auxiliary electrode formed on the address electrode

15 in a portion where the scan electrode and the sustain electrode intersects the address electrode.

3. The plasma display panel as claimed in claim 1, wherein

the auxiliary electrode is extended in the direction parallel to

20 the scan electrode and the sustain electrode at the intersecting portion.

4. The plasma display panel as claimed in claim 3, wherein  
the width of the auxiliary electrode is set wider than that of  
each of the scan electrode and the sustain electrode.

5       5. The plasma display panel as claimed in claim 3, wherein  
the width of the auxiliary electrode is set the same as that of  
each of the scan electrode and the sustain electrode.

10      6. The plasma display panel as claimed in claim 3, wherein  
the width of the auxiliary electrode is set narrower than that of  
each of the scan electrode and the sustain electrode.

15      7. The plasma display panel as claimed in claim 3, wherein  
the auxiliary electrode is extended in one direction in parallel  
to the scan electrode and the sustain electrode at the  
intersecting portion.

20      8. The plasma display panel as claimed in claim 3, wherein  
the auxiliary electrode is extended in both directions in  
parallel to the scan electrode and the sustain electrode at the  
intersecting portion.

9. The plasma display panel as claimed in claim 3, wherein the auxiliary electrode is extended in parallel to the scan electrode at a portion where the auxiliary electrode intersects the scan electrode.

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10. The plasma display panel as claimed in claim 3, wherein the auxiliary electrode is extended in parallel to the sustain electrode at a portion where the auxiliary electrode intersects the sustain electrode.

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11. The plasma display panel as claimed in claim 1, wherein the distance between the sustain electrode and the address electrode is set the same as that between the scan electrode and the address electrode.

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12. The plasma display panel as claimed in claim 1 or 2, wherein the distance between the scan electrode and the sustain electrode is set 300  $\mu\text{m}$  or more.

13. A method for driving a plasma display panel, wherein the 20 panel comprises a scan electrode and a sustain electrode, which are formed on an upper substrate in parallel to each other; and an address electrode formed on a lower substrate in the direction

where the address electrode intersects the scan electrode and the sustain electrode, the method comprising the steps of:

generating an opposite discharge between one of the scan electrode and the sustain electrode and the address electrode of  
5 the lower substrate, during a sustain period; and

generating a sheet discharge between the scan electrode and the sustain electrode after the opposite discharge is generated.

14. The method as claimed in claim 13, wherein during the  
10 sustain period, a sustain pulse is alternately applied to the scan electrode and the sustain electrode.

15. The method as claimed in claim 14, wherein when the sustain pulse is alternately applied to the scan electrode and  
15 the sustain electrode during the sustain period, a pulse of the positive polarity is applied to the address electrode.

16. The method as claimed in claim 15, wherein the width of a bias pulse of the positive polarity is smaller than that of the  
20 sustain pulse.

17. A method for driving a plasma display panel, which is driven with it divided into a plurality of sub-fields including a reset period, an address period and a sustain period, the method comprising the steps of:

5 generating an address discharge for selecting a cell during the address period,;

supplying a first sustain pulse, which falls from a first voltage to a second voltage, to a scan electrode during the sustain period;

10 alternately supplying the first sustain pulse and a second sustain pulse, which falls from the first voltage to the second voltage, to a sustain electrode; and

15 supplying the first and second sustain pulses to the scan electrode and the sustain electrode and at the same time supplying a bias pulse of the positive polarity to an address electrode.

18. The method as claimed in claim 17, wherein the second voltage is set to a ground voltage.

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19. The method as claimed in claim 17, wherein the second voltage is set to a voltage of the negative polarity.

20. The method as claimed in claim 17, wherein the width of the bias pulse of the positive polarity is set narrower than that of the first and second sustain pulses.

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21. A method for driving a plasma display panel, wherein the plasma display panel is driven with it divided into a plurality of sub-fields including a reset period, an address period and a sustain period, the method comprising the steps of:

10 generating an address discharge for selecting a cell during the address period;

supplying a first sustain pulse, which falls from a first voltage to a second voltage, to a sustain electrode during the sustain period;

15 alternately supplying the first sustain pulse and a second sustain pulse, which falls from the first voltage to the second voltage, to a scan electrode; and

20 supplying the first and second sustain pulses to the scan electrode and the sustain electrode and at the same time supplying a bias pulse of the positive polarity to an address electrode.

22. A method for driving a plasma display panel, wherein the panel is driven with it divided into a plurality of sub-fields including a reset period, an address period and a sustain period, wherein the plasma display panel comprises a scan electrode and a sustain electrode which are formed in parallel to a discharge cell at a first distance; and an address electrode formed to intersect a discharge cell at a second distance narrower than the first distance between the scan electrode and the sustain electrode, the method comprising the steps of:

10 generating an address discharge for selecting a cell during the address period;

supplying a first sustain pulse, which falls from a first voltage to a second voltage, to a scan electrode during the sustain period;

15 alternately supplying the first sustain pulse and a second sustain pulse, which falls from the first voltage to the second voltage, to a sustain electrode; and

20 supplying the first and second sustain pulses to the scan electrode and the sustain electrode and at the same time supplying a bias pulse of the positive polarity to an address electrode.

23. The method as claimed in claim 22, wherein the second voltage is set to a ground voltage.

24. The method as claimed in claim 22, wherein the second 5 voltage is set to a voltage of the negative polarity.

25. The method as claimed in claim 22, wherein the width of the bias pulse of the positive polarity is set narrower than that of the first and second sustain pulses.

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26. The method as claimed in claim 22, wherein the reset period is driven with it divided into a set-up period and a set-down period, and the method further comprises the steps of:

supplying a first ramp-up waveform to the scan electrode 15 during the set-up period; and

supplying a second ramp-up waveform to the sustain electrode formed in parallel to the scan electrode during the set-up period.

20 27. The method as claimed in claim 26, wherein voltage values of the first ramp-up waveform and the second ramp-up

waveform are set to prevent discharge from occurring between the scan electrode and the sustain electrode.

28. The method as claimed in claim 26, wherein voltage  
5 values of the first ramp-up waveform and the second ramp-up waveform are set same.

29. The method as claimed in claim 28, wherein the highest voltage value of the first ramp-up waveform and the second ramp-  
10 up waveform is set below 350V.

30. The method as claimed in claim 26, wherein after the second ramp-up waveform is supplied, a DC voltage of the positive polarity is applied to the sustain electrode during the set-down  
15 period and the address period.

31. The method as claimed in claim 30, wherein a voltage value of the DC voltage of the positive polarity is set the same as the highest voltage value of the second ramp-up waveform.

32. The method as claimed in claim 31, wherein the highest voltage value of the DC voltage of the positive polarity is set below 350V.

5       33. A method for driving a plasma display panel, wherein the plasma display panel is driven with it divided into a plurality of sub-fields including a reset period, an address period and a sustain period, and comprises a scan electrode and a sustain electrode which are formed in parallel to a discharge 10 cell at a first distance; and an address electrode formed to intersect a discharge cell at a second distance narrower than the first distance between the scan electrode and the sustain electrode, the method comprising the steps of:

generating an address discharge for selecting a cell during 15 the address period;

supplying a first sustain pulse, which falls from a first voltage to a second voltage, to a sustain electrode during the sustain period;

alternately supplying the first sustain pulse and a second 20 sustain pulse, which falls from the first voltage to the second voltage, to a scan electrode; and

supplying the first and second sustain pulses to the scan electrode and the sustain electrode and at the same time supplying a bias pulse of the positive polarity to an address electrode.

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34. A method for driving a plasma display panel, wherein the plasma display panel is driven with it divided into a plurality of sub-fields including a reset period, an address period and a sustain period, the method comprising the steps of:

10 generating an address discharge for selecting a cell during the address period;

supplying a first sustain pulse, which falls from a first voltage to a second voltage, to a scan electrode during the sustain period;

15 alternately supplying the first sustain pulse and a second sustain pulse, which falls from the first voltage to the second voltage, to a sustain electrode during the sustain period; and

supplying an erase pulse having a voltage value of the negative polarity to the scan electrode after the sustain period.

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35. The method as claimed in claim 34, further comprising the step of supplying the first and second sustain pulses to the

scan electrode and the sustain electrode during the sustain period, and at the same time supplying a bias pulse of the positive polarity to the address electrode.

5        36. The method as claimed in claim 35, wherein the width of the bias pulse of the positive polarity is set narrow than that of the first and second sustain pulses.

10      37. The method as claimed in claim 34, wherein the width of the erase pulse is set narrow than that of the first and second sustain pulses.

15      38. A method for driving a plasma display panel, wherein the plasma display panel is driven with it divided into a plurality of sub-fields including a reset period, an address period and a sustain period, and wherein the plasma display panel comprises a scan electrode and a sustain electrode which are formed in parallel to a discharge cell at a first distance; and an address electrode formed to intersect a discharge cell at a second distance narrower than the first distance between the scan electrode and the sustain electrode, the method comprising the steps of:

generating an address discharge for selecting a cell during the address period;

supplying a first sustain pulse, which falls from a first voltage to a second voltage, to a scan electrode during the  
5 sustain period;

alternately supplying the first sustain pulse and a second sustain pulse, which falls from the first voltage to the second voltage, to a sustain electrode during the sustain period; and

supplying an erase pulse having a voltage value of the  
10 negative polarity to the scan electrode after the sustain period.

39. The method as claimed in claim 38, further comprising the step of supplying the first and second sustain pulses to the scan electrode and the sustain electrode during the sustain  
15 period, and at the same time supplying a bias pulse of the positive polarity to the address electrode.

40. The method as claimed in claim 39, wherein the width of the bias pulse of the positive polarity is set narrow than that  
20 of the first and second sustain pulses.

41. The method as claimed in claim 38, wherein the width of the erase pulse is set narrow than that of the first and second sustain pulses.

5        42. The method as claimed in claim 38, wherein the reset period is driven with it divided into a set-up period and a set-down period, and the method further comprises:

supplying a first ramp-up waveform to the scan electrode during the set-up period; and

10        supplying a second ramp-up waveform to the sustain electrode formed in parallel to the scan electrode during the set-up period.

43. The method as claimed in claim 42, wherein voltage values of the first ramp-up waveform and the second ramp-up waveform are set to prevent discharge from occurring between the scan electrode and the sustain electrode.

44. The method as claimed in claim 43, wherein voltage values of the first ramp-up waveform and the second ramp-up waveform are set same.

45. The method as claimed in claim 44, wherein the highest voltage value of the first ramp-up waveform and the second ramp-up waveform is set below 350V.

5       46. The method as claimed in claim 42, wherein after the second ramp-up waveform is supplied, a DC voltage of the positive polarity is applied to the sustain electrode during the set-down period and the address period.

10       47. The method as claimed in claim 46, wherein a voltage value of the DC voltage of the positive polarity is set the same as the highest voltage value of the second ramp-up waveform.

15       48. The method as claimed in claim 47, wherein the highest voltage value of the DC voltage of the positive polarity is set below 350V.

20       49. A method for driving a plasma display panel, wherein the plasma display panel is driven with a reset period divided into a set-up period and a set-down period, the method comprising the steps of:

supplying a first ramp-up waveform, which rises from a first voltage value to a peak voltage, to a scan electrode during the set-up period;

5 supplying a second ramp-up waveform to a sustain electrode formed in parallel to the scan electrode during the set-up period; and

supplying a ramp-down waveform, which falls from a second voltage value lower than the first voltage value to a third voltage value, to the scan electrode during the set-down period.

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50. The method as claimed in claim 49, wherein the peak voltage is set below 350V.

51. The method as claimed in claim 49, wherein the peak voltage is set below 300V.

52. The method as claimed in claim 49, wherein the second voltage value is set below 200V.

53. The method as claimed in claim 49, wherein the third voltage value becomes the ground voltage.

54. The method as claimed in claim 49, wherein the period where the ramp-down waveform is applied is set to be longer twice than the period where the first ramp-up waveform is applied.

5        55. A method for driving a plasma display panel wherein the plasma display panel is driven with a reset period divided into a set-up period and a set-down period, wherein the plasma display panel comprises a scan electrode and a sustain electrode which are formed in parallel to a discharge cell at a first distance; 10 and an address electrode formed to intersect a discharge cell at a second distance narrower than the first distance between the scan electrode and the sustain electrode, the method comprising the steps of:

      supplying a first ramp-up waveform, which rises from a 15 first voltage value to a peak voltage, to a scan electrode during the set-up period;

      supplying a second ramp-up waveform to a sustain electrode formed in parallel to the scan electrode during the set-up period; and

20        supplying a ramp-down waveform, which falls from a second voltage value lower than the first voltage value to a third voltage value, to the scan electrode during the set-down period.

56. The method as claimed in claim 55, wherein the peak voltage is set below 350V.

5 57. The method as claimed in claim 55, wherein the peak voltage is set below 300V.

58. The method as claimed in claim 55, wherein the second voltage value is set below 200V.

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59. The method as claimed in claim 55, wherein the third voltage value becomes the ground voltage.

60. The method as claimed in claim 49, wherein the period  
15 where the ramp-down waveform is applied is set to be longer twice than the period where the first ramp-up waveform is applied.

61. The method as claimed in claim 55, wherein voltage values of the first ramp-up waveform and the second ramp-up  
20 waveform are set same.

62. The method as claimed in claim 61, wherein after the second ramp-up waveform is applied, a DC voltage of the positive polarity is consecutively applied to the sustain electrode.